



## **The Swarm Initial Field Model – a Model of the Earth's Magnetic Field for 2014 Determined From One Year of Swarm Satellite Constellation Data**

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**GP51A-3702** The *Swarm Initial Field Model* – a Model of the Earth's Magnetic Field for 2014 Determined From One Year of Swarm Satellite Constellation Data[Back to:](#)[Christopher Finlay](#)

Friday, December 19, 2014 08:00 AM - 12:20 PM  
Moscone South  
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Almost one year of data from ESA's Swarm constellation mission are used to derive a model of the Earth's magnetic field and its time variation (secular variation). The model describes contributions from the core and lithosphere as well as large-scale contributions from the magnetosphere (and its Earth-induced counterpart). We use data from geomagnetic quiet times ( $K_p$  less than 20, time change of Dst-index less than 2 nT/hr) and dark regions (sun below horizon) and co-estimate the Euler angles describing the rotation between the vector magnetometer instrument frame and the North-East-Center (NEC) frame. In addition to the magnetic field observations provided by each of the three Swarm satellites we include the East-west magnetic gradient information provided by the lower Swarm satellite pair, thereby explicitly taking advantage of the constellation aspect of Swarm. We assess the spatial and temporal model resolution that can be obtained from one year of Swarm satellite data by comparison with other recent models that also include non-Swarm magnetic observations.

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